Amendments to the Claims

This listing replaces all previous versions.

Listing of Claims:

19-23. (Canceled)

24. (Original) A method for manipulating a complex in a sample, the method comprising:

admixing with the sample an engineered microparticle comprising a conductive core, an insulating layer coating the conductive core and having a thickness sufficient to render the engineered microparticle maneuverable by dielectrophoresis, and a linking element;

associating the engineered microparticle with the target analyte to form the complex; and

manipulating the complex using dielectrophoresis.

25. (Original) The method of claim 24, wherein the sample comprises blood, urine, saliva, amniotic fluid, biopsy, cell suspension, cell lysate, chromatographic fraction, or conditioned media..

26. (Original) The method of claim 24, wherein the sample comprises water, food, food processing, food distribution, mineral, or ore..

27. (Original) The method of claim 24, wherein the manipulating comprises sorting.

28. (Original) The method of claim 24, wherein the manipulating comprises separating.

29. (Original) The method of claim 24, wherein the manipulating comprises purification of the sample.

30. (Original) The method of claim 24, wherein the manipulating comprises trapping.

31. (Original) The method of claim 24, wherein the linking element comprises an antibody, single chain antibody, peptide, hormone, nucleic acid sequence, therapeutic drug, antibiotic, or a chemically-reactive compound.

32. (Original) The method of claim 24, wherein the insulating layer comprises one or more self-assembled monolayer layers.

33. (Currently amended) A method for identifying one or more complexes within a sample, the method comprising:

admixing with the sample a plurality of engineered microparticles, each microparticle having a different dielectric property;

associating the plurality of engineered microparticles with one or more target analytes to form one or more complexes; and

identifying the one or more complexes by distinguishing between the different dielectric properties using one or more impedance sensors or different dielectrophoretic responses to AC electrical fields of various frequencies.

34. (Original) The method of claim 33, wherein each the plurality of engineered microparticles comprise a conductive core and an insulating layer.

35. (Original) The method of claim 34, wherein the insulating layer comprises one or more self-assembled monolayer layers.

36. (New) A method for detecting a complex within a sample, the method comprising:

admixing with the sample an engineered microparticle having a first dielectric property and comprising a conductive core, an insulating layer having a thickness sufficient to render the microparticle maneuverable by dielectrophoresis, and a linking element;

associating the engineered microparticle with a target analyte to form the complex, the complex having a second dielectric property; and

detecting the complex by distinguishing between the first and second dielectric properties using one or more impedance sensors.

37. (New) The method of claim 36, wherein the sample comprises blood, urine, saliva, amniotic fluid, biopsy, cell suspension, cell lysate, chromatographic fraction, or conditioned media.

38. (New) The method of claim 36, wherein the sample comprises water, food, food processing, food distribution, mineral, or ore.

39. (New) The method of claim 36, wherein the linking element comprises an antibody, single chain antibody, peptide, hormone, nucleic acid sequence, therapeutic drug, antibiotic, or a chemically-reactive compound.

40. (New) The method of claim 36, wherein the insulating layer comprises one or more self-assembled monolayer layers.

41. (New) A method for detecting a complex within a sample, the method comprising:

admixing with the sample an engineered microparticle having a first dielectric property and comprising a conductive core, an insulating layer having a thickness sufficient to render the microparticle maneuverable by dielectrophoresis, and a linking element;

associating the engineered microparticle with a target analyte to form the complex, the complex having a second dielectric property; and

detecting the complex by distinguishing between the first and second dielectric properties using different dielectrophoretic responses to AC electrical fields of various frequencies.